WHAT IS CLAIMED IS:

1. An adaptive antenna system, comprising:

N antennae;

N forward equalizers operatively coupled to a respective one of the N antennae; and

N processors performing a constant modulus algorithm (CMA) to thereby generate N respective control signals which adapt coefficients associated with each respective one of the forward equalizer.

2. The adaptive antenna system as recited in claim 1, further comprising:

a decision device receiving a signal based on the collected output of the N forward equalizers; and

a feedback equalizer receiving an output of the decision device and generating a feedback signal biasing the signal received by the decision device,

wherein the Nth control signal generated by the Nth processor adapts coefficients associated with the feedback equalizer.

3. The adaptive antenna system as recited in claim 1, wherein each of the N processors implement the equation:

$$c_n(k+1) = c_n(k) + v_k \hat{I}_k (\hat{I}_k^2 - |\gamma_m|^2)$$

where:

$c_n(k)$ is the n^{th} equalizer coefficient at time k,

v_k is the equalizer input,

is the equalizer output; and

$|\gamma_m|^2$ is the CMA constant inside a Godard cost function for the m^{th} antenna.

4. The adaptive antenna system as recited in claim3, wherein the equation implemented

by each processor employs a different coefficient $|\gamma_m|^2$.

5. An adaptive antenna system, comprising:

first and second antennae;

first and second forward equalizers operatively coupled to a respective one of the first and second antennae;

a first combiner receiving first and second forward equalizes signals generated by the first and second forward equalizers;

a sampling circuit receiving a signal based on the combined signal output by the first combiner; and

first and second processors, each performing a constant modulus algorithm (CMA) to thereby generate respective first and second control signals which adapt coefficients associated with a respective one of the first and second forward equalizers

wherein the first processor receives an input signal based on the output of the sampling circuit.

6. The adaptive antenna system as recited in claim 5, wherein:

the first and second control signals are applied to the first and second forward equalizers, respectively, during a first operating mode; and

the first control signal is applied to the first and second forward equalizers during second mode of operation.

7. The adaptive antenna system as recited in claim 5, further comprising:

a second combiner disposed between the first combiner and the sampling circuit; and

a feedback equalizer that receives an output of the sampling circuit and generates a feedback signal,

wherein:

the feedback signal is applied to a second input port of the second combiner to thereby

bias the signal received by the sampling circuit; and

the first control signal generated by the first processor adapts coefficients associated with the feedback equalizer.

8. The adaptive antenna system as recited in claim 5, wherein the first and second processors implement the algorithm:

$$c_n(k+1) = c_n(k) + v_k \hat{I}_k(\hat{I}_k^2 - |\gamma_m|^2)$$

where:

$c_n(k)$ is the n^{th} equalizer coefficient at time k,

v_k is the equalizer input,

is the equalizer output; and

$|\gamma_m|^2$ is the CMA constant inside a Godard cost function for the m^{th} antenna, where n is equal to 2.

9. The adaptive antenna system as recited in claim 8, wherein the equation implemented by the first and second processors each employs a different coefficient $|\gamma_m|^2$.

10. The adaptive antenna system as recited in claim 6, further comprising a switch for selectively applying one of the first and second control signals to the second forward equalizer.

11. A beamforming antenna system employing first and second antennae and a blind dual error antenna diversity (DEAD) algorithm, comprising:

first forward equalizing means operatively coupled to a first antenna and receiving a first control signal for generating a first forward equalized signal;

second forward equalizing means operatively coupled to a second antenna and receiving a second control signal for generating a second forward equalized signal;

first processing means for generating the first control signal based on a combination of

the first and second forward equalized signals; and

second processing means receiving the second forward equalized signal for generating the second control signal.

12. The beamforming antenna system as recited in claim 11, further comprising:

sampling means for sampling the a combination of the first and second forward equalized signals to thereby generate a sampled combination signal,

wherein the first processing means receives the sampled combination signal.

13. The beamforming antenna system as recited in claim 12, further comprising:

feedback means for generating a feedback signal based on the sampled combination signal,

wherein:

the feedback means generate a bias signal for biasing the combination of the first and second equalized signals, and

the coefficients employed by the feedback means are controlled by the first control signal.

14. The beamforming antenna system as recited in claim 11, wherein:

the first and second control signals are applied to the first and second forward equalizing means, respectively, during a first operating mode; and

the first control signal is applied to the first and second forward equalizing means during a second mode of operation.

15. The beamforming antenna system as recited in claim 11, wherein the first and second processing means implement the algorithm:

$$c_n(k+1) = c_n(k) + v_k \hat{I}_k (\hat{I}_k^2 - |\gamma_m|^2)$$

where:

$c_n(k)$ is the n^{th} equalizer coefficient at time k,

v_k is the equalizer input,

is the equalizer output; and

$|\gamma_m|^2$ is the CMA constant inside a Godard cost function for the m^{th} antenna, where n is equal to 2.

16. A method for operating a beamforming antenna system employing first and second antennae and a blind dual error antenna diversity (DEAD) algorithm, comprising:

generating a first forward equalizing signal in response to a first antenna signal and a first control signal;

generating a second forward equalizing signal in response to a second antenna signal and a second control signal;

combining the first and second forward equalizing signals to produce a combined signal;

generating the first control signal based on the combined signal; and

generating the second control signal based on the second forward equalized signal.

17. The method as recited in claim 16, further comprising:

sampling the combined signal to thereby generate a sampled combination signal, wherein the step of generating the first control signal is performed responsive to the sampled combination signal.

18. The method as recited in claim 17, further comprising:

generating a feedback signal based on the sampled combination signal; and

biasing the combined signal based on the feedback signal.

19. The method as recited in claim 16, wherein the steps by which the first and second control signals are generated implement the algorithm:

$$c_n(k+1) = c_n(k) + v_k \hat{I}_k (\hat{I}_k^2 - |\gamma_m|^2)$$

where:

$c_n(k)$ is the n^{th} equalizer coefficient at time k,

v_k is the equalizer input,

is the equalizer output; and

$|\gamma_m|^2$ is the CMA constant inside a Godard cost function for the m^{th} antenna, where n is equal to 2.

20. The method as recited in claim 16, wherein the steps for generating the first and second Forward Equalizing signals further comprise:

generating a first forward equalizing signal in response to a first antenna signal and a first control signal using first coefficients; and

generating a second forward equalizing signal in response to a second antenna signal and a second control signal using second coefficients,

wherein the first and second coefficients are selected responsive to the first and second control signals, respectively.